

PROFILE VIEW

N.T.S.
(TYPICAL OF ALL)



PC-1

NOTES:

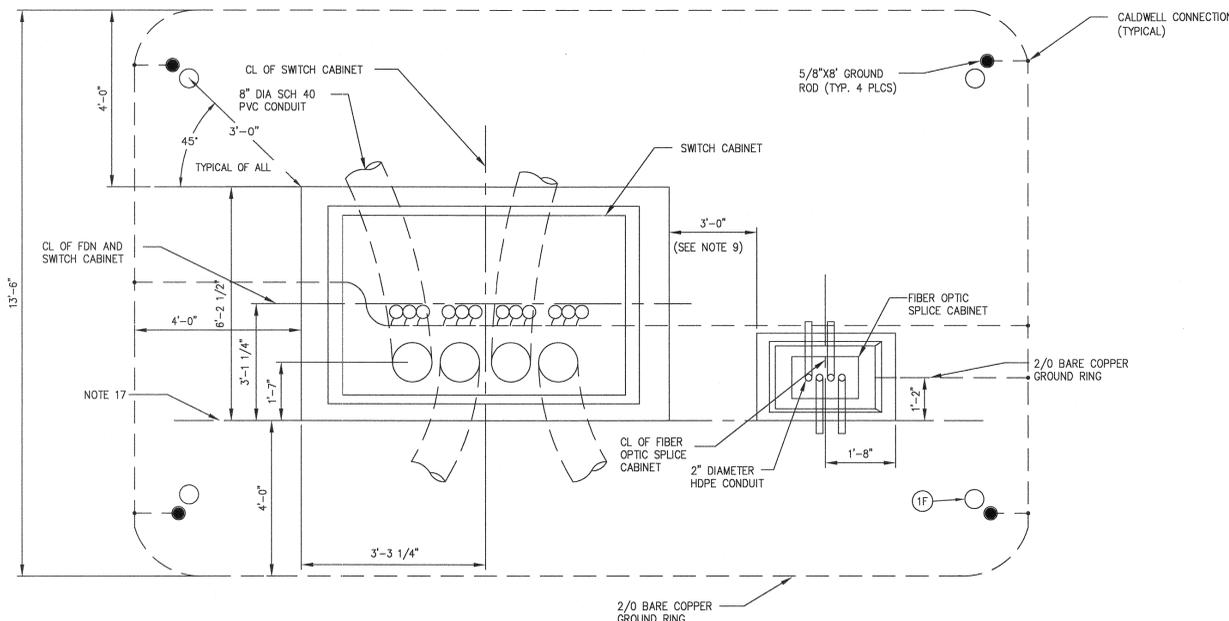
- SIGN BACKING FOR EXTERIOR SIGNS SHALL BE 1/8 IN ALUMINUM OR EQUAL.
- USE SELF TAPPING SCREWS TO MOUNT SIGNAGE ON TRANSFORMER AND SWITCH DOORS.

CABLE TAG DETAIL

TRANSFORMER TAG DETAIL

BILL OF MATERIALS - SWITCH CABINET, 4-WAY, 35 KV, 600A			
ITEM	QUANTITY	UNIT	DESCRIPTION
1F	4	EA	BOLLARD 5 1/2" O.D. X 6'-0", CONCRETE FILLED, PAINTED YELLOW OR PROVIDE YELLOW COVERS
14A	*	EA	ELBOW ASSEMBLY KIT, 600 AMP, 35KV, 1/0 AWG AL, 345 MILS
14B	*	EA	ELBOW ASSEMBLY KIT, 600 AMP, 35KV, 350kcmil AL, 345 MILS
15	*	EA	ELBOW ASSEMBLY KIT, 600 AMP, 35KV, 4/0 AWG AL, 345 MILS
16	*	EA	ELBOW ASSEMBLY KIT, 600 AMP, 35KV, 750 kcmil AL, 345 MILS
17	*	EA	ELBOW ASSEMBLY KIT, 600 AMP, 35KV, 1000 kcmil AL, 345 MILS
18	2	EA	LUG, COMPRESSION, COPPER, 2 HOLE, 2/0 AWG FOR GROUND CONNECTION
19	90	FT	WIRE, 2/0 COPPER BARE, STR
20	16	EA	CONNECTOR, COPPER COMPRESSION #6-1/0 TO #6-1/0
26	9	EA	FLT IND, 3 PH, TST PT MTD, 600 AMP, W/ RMT IND, 800 A TRIP
31	4	EA	GROUND ROD, 5/8" x 8'
32	4	EA	CONNECTOR, COPPER, 1/2"-5/8" ROD TO 1/0-2/0
64	4	EA	8" SCH 40 PVC 90 DEGREE ELBOW, 48" RADIUS
OWNER FURNISHED EQUIPMENT			
1C	1	EA	SWITCHGEAR, PADMOUNT, 38KV PUFFER GAS, 4-WAY W/ 20" CABLE COMPARTMENT
25B	1	EA	PAD/VAULT, 4-WAY SWITCH

- * SEE SINGLE LINE DRAWING E-SL-30 FOR PROPER ELBOW SIZING
 ** SEE FIBER TOPOLOGY DRAWING E-FL-13 FOR SWITCH CABINETS WITH FIBER CABINETS



PLAN VIEW

N.T.S.
(TYPICAL OF ALL)

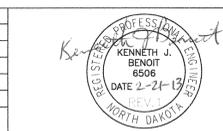
NOTES:

- INDICATE DESTINATION FOR EACH CIRCUIT.
- NOT USED
- BOND GROUND RODS TO ALL APPLICABLE GROUNDING LUGS ON SWITCH CABINET.
- EACH SET OF MV CABLES WILL BE TERMINATED ONTO A SINGLE SET OF BUSHINGS. NO PIGGYBACKING OF ELBOWS.
- SWITCH CABINET ENCLOSURE OVERALL DIMENSIONS ARE SHOWN ONLY. SEE MANUFACTURER SPECIFICATIONS FOR DETAILED DIMENSIONS.
- FOR ANCHOR SIZING AND LOCATION, REFER TO SWITCH CABINET MANUFACTURER'S DRAWINGS.
- FLOWABLE THERMAL BACKFILL/LEAN CONCRETE BASE SHALL HAVE A MAXIMUM THERMAL RESISTIVITY OF 60 RHO.
- MINIMUM BENDING RADIUS FOR 2" HDPE CONDUIT IS 24". MINIMUM BENDING RADIUS FOR 8" SCH 40 PVC IS 48". CONTRACTOR TO VERIFY MINIMUM BENDING RADIUS FOR POWER CABLE.
- A MINIMUM SEPARATION BETWEEN SWITCH CABINET AND FIBER ENCLOSURE OF 3' IS REQUIRED TO ALLOW FOR 180 DEGREE OPENING OF BOTH ENCLOSURE DOORS.
- AREA UNDER PAD SHALL BE EXCAVATED TO A DEPTH NECESSARY TO REACH FIRM, UNDISTURBED MATERIAL, WHICHEVER IS DEEPER. IF FIRM MATERIAL HAS NOT BEEN REACHED WITHIN A DEPTH OF 5 FEET, EXCAVATE 1 FOOT BEYOND THE PERIMETER OF THE PAD AND BACKFILL THE ENTIRE EXCAVATED AREA WITH CLEAN, NON-EXPANSIVE SOIL, COMPACTED TO 90% OF MAXIMUM DENSITY. SOIL SHALL BE PLACED IN LAYERS NOT MORE THAN 6" THICK BEFORE COMPACTION. MAXIMUM DENSITY AND IN PLACE DENSITY TO BE DETERMINED PER ASTM D-1556 AND ASTM D-1557.
- BACKFILL AROUND GROUND CONDUCTOR WITH 4" OF WELL COMPACTED SELECT NATIVE WILL WITH NO ROCKS LARGER THAN WHAT WOULD PASS THROUGH A #4 SCREEN.
- MINIMUM DISTANCE BETWEEN GROUND RODS IS 10 FEET.
- SEAL CONDUIT AFTER CABLE INSTALLATION.
- DIRECTIONAL FAULT INDICATORS TO BE LOCATED AT BASE OF EACH DEAD BREAK CONNECTOR ELBOW. FAULT INDICATORS ARE TO BE INSTALLED ON ANY GENERATOR CABLES. REFER TO E-SL-30 FOR LOCATIONS.
- SEE E-FS-32 FIBER OPTIC SPLICE CABINET FOR DETAILS AND BILL OF MATERIAL FOR FIBER CABINET.
- INSTALL TAG ON FRONT OF CABINET. SEE DETAILS.
- MARK EACH PHASE WITH COLOR TAPE AS FOLLOWS:
 - H1(A)=BLACK, H2(B)=RED, H3(C)=BLUE



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 ND License No. 954PE

NO.	BY	CHK.	APP.	DATE	REVISION DESCRIPTION
A	BNK	RJG	CSF	7/8/11	60% DELIVERABLE
B	BNK	RJG	CSF	8/16/11	85% DELIVERABLE
C	BNK	CSF	CSF	9/20/11	90% DELIVERABLE
O	BNK	CSF	JLM	10/4/11	ISSUED FOR CONSTRUCTION
1	NJG	JLM	JLM	12/11/12	CONSTRUCTION REVISIONS



CLIENT	7/8/11/8/16/11/9/20/11/10/4/11
BID	
CONSTRUCTION PERMITTING	
RELEASED TO/FOR	A B C 0 1 2 3
DATE RELEASED	

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Scale	N.T.S.
Date	07/08/11
Drawn	BNK
Checked	CSF
Designed	RJG
Approved	JLM

MINNESOTA POWER
 AN ALLETE COMPANY
BISON
 A WIND ENERGY INITIATIVE OF MINNESOTA POWER IN NORTH DAKOTA

BISON 3 WIND PROJECT
 MORTON & OLIVER COUNTIES, NORTH DAKOTA
 34.5KV COLLECTOR SYSTEM
 4-WAY SWITCH CABINET DETAIL

BARR PROJECT No.	34/33-1006
CLIENT PROJECT No.	
DWG. No.	E-SD-31
REV. No.	1